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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,150	10/30/2003	Gary Gibson	100111365-1	1482

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EXAMINER	
ALUNKAL, THOMAS D	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 07/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

NC

Office Action Summary	Application No.	Applicant(s)	
	10/699,150	GIBSON, GARY	
	Examiner	Art Unit	
	Thomas D. Alunkal	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/30/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1,7-12 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over **claims 1-2,8-13** of U.S. Patent No. **6,980,507**. Although the conflicting claims are not identical, they are not patentably distinct from each other. In current application, **Claim 1**, applicant claims "wherein light emitted from the luminescent layer and received by the detector materially differs when the phase-change layer transforms from the first phase to the second phase". Referring to **claim 2** of U.S. Patent No. **6,980,507**, one of ordinary skill in the art at the time of the invention would have found it obvious that this claim encompasses the above limitation of claim 1 because by transmitting OR reflecting light via the phase change layer will ultimately

differ the light received by the detector. Claims 7-12 in application and claims 8-13 in U.S. Patent No. **6,980,507** are identical.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 19 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 19 claims, "the beam transmitter for detecting the light emitted from the luminescent layer". It is unclear whether applicant has mistakenly omitted "detector" here, which would be consistent with the disclosure and previous claims, or has intentionally included "beam transmitter". For faster prosecution, from this point forward, the "beam transmitter" of claim 19 will be understood as meaning "detector".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-9,11-40 rejected under 35 U.S.C. 102(e) as being anticipated by Terao et al (**U.S. PgPub 2003/0218941**).

Regarding Claims 1-6,9,11-12,30-34

Terao et al teach:

A data storage device for use with a beam transmitter configured to transmit a beam, comprising (**see Abstract**):

- a luminescent layer comprising a luminescent material capable of emitting light while being bombarded by the beam from the beam transmitter (**see Paragraph 129**)
- a detector located near the luminescent layer for detecting the light emitted from the luminescent layer (**see Paragraph 81 and Figure 9, Element 8-3**)
- a phase-change layer located between the luminescent layer and the detector, said phase-change layer able to transform from a first phase to a second phase (**see Paragraphs 22 and 33**)
- wherein light emitted from the luminescent layer and received by the detector materially differs when the phase-change layer transforms from the first phase to the second phase (**see Paragraph 14**)
- wherein the first phase of the phase-change layer enables transmission of materially more light through the phase-change layer from the luminescent layer to the detector than the second phase of the phase-change layer (**see Paragraph 14**)

- wherein the first phase of the phase-change layer represents an unwritten region of the phase-change layer and the second phase of the phase-change layer represents a written region of the phase-change layer (**see Figure 2, Elements 18 and 19**)
- wherein the first phase of the phase-change layer represents a written region of the phase-change layer and the second phase of the phase-change layer represents an unwritten region of the phase-change layer (**see Figure 2, Elements 18 and 19 and Paragraph 12**)
- wherein the beam comprises a low power density photon beam lacking sufficient power to cause the phase-change layer to change from the first phase to the second phase (**see Paragraph 110)**
- wherein the beam comprises a low power density electron beam lacking sufficient power to cause the phase-change layer to change from the first phase to the second phase(**see Paragraph 110**)
- wherein the luminescent layer comprises a material having a high thermal conductivity (**see Paragraphs 20 and 21**) **Tungsten oxide and thiophene organic molecules have higher thermal conductivities than sulfur compound**.
- wherein the luminescent layer comprises a material having a low thermal conductivity (**see Paragraphs 21 and 129**). **Germanium compound has higher thermal conductivity than Zinc oxide**.

- wherein the luminescent layer and the phase-change layer are adjacent and share an interface (**see Figure 2, Elements 12, 18 and 19**)
- wherein the luminescent layer comprises at least one of a YAG-based material, a rare earth element dopant, a YAP-based material, GaN, Zn oxide, Zn sulfide, and Si.sub.3O.sub.4 (**see Paragraph 129**)
- wherein the luminescent layer comprises an optically neutral medium and optically active nanoparticles in the optically neutral medium (**see Paragraph 129**). **Nanoparticles are of the same variety as those disclosed in Claim 12**
- further comprising an anti-reflective coating located proximate the phase-change layer (**see Paragraph 119**)
- further comprising a thermal diffusion layer located proximate the phase-change layer (**see Paragraph 101**)
- further comprising a reflective layer proximate the phase-change layer (**see Paragraph 115**)
- the phase-change layer comprises a plurality of layers of phase-change material (**see Paragraph 20**)
- wherein the luminescent layer comprises a plurality of layers of luminescent material (**see Paragraph 20**)

Regarding Claims 13-18,35-39

Terao et al teach:

A data storage device for use with a beam transmitter configured to transmit a beam, comprising (**see Abstract**):

- a luminescent layer comprising a luminescent material capable of emitting light while being bombarded by the beam from the beam transmitter (**see Paragraph 129**)
- a phase-change layer located between the luminescent layer and the beam transmitter, said phase-change layer able to transform from a first phase to a second phase (**see Paragraphs 12 and 33**)
- a detector located proximate the luminescent layer for detecting the light emitted from the luminescent layer (**see Paragraph 81 and Figure 9, Element 8-3**)
- wherein said luminescent layer is positioned between the phase-change layer and the detector, and further wherein light emitted from the luminescent layer and received by the detector materially differs when the phase-change layer transforms from the first phase to the second phase (**see Paragraphs 12 and 14**). Terao et al teach that the laser can be incident from either side of the storage media. One of ordinary skill at the time of the invention would realize that by changing the incident side of the laser light, the orientation of the phase-change and luminescent layers would be reversed.
- wherein the first phase of the phase-change layer enables transmission of materially more light from the luminescent layer to the detector than the second phase of the phase-change layer (**see Paragraph 14**)
- wherein the first phase of the phase-change layer represents an unwritten region of the phase-change layer and the second phase of the phase-change layer

represents a written region of the phase-change layer (**see Figure 2, Elements 18 and 19**)

- wherein the first phase of the phase-change layer represents a written region of the phase-change layer and the second phase of the phase-change layer represents an unwritten region of the phase-change layer (**see Figure 2, Elements 18 and 19 and Paragraphs 12 and 33**)
- wherein the beam comprises a low power density beam lacking sufficient power to cause the phase-change layer to change from the first phase to the second phase (**see Paragraph 110**)
- wherein the luminescent layer comprises at least one of a YAG-based material, a rare earth element dopant, a YAP-based material, GaN, Zn oxide, Zn sulfide, and Si.sub.3O.sub.4 (**see Paragraph 129**)
- further comprising an anti-reflective coating located proximate the phase-change layer (**see Paragraph 119**)
- further comprising a thermal diffusion layer located proximate the phase-change layer (**see Paragraph 101**)
- further comprising a reflective layer proximate the phase-change layer (**see Paragraph 115**)
- the phase-change layer comprises a plurality of layers of phase-change material (**see Paragraph 20**)
- wherein the luminescent layer comprises a plurality of layers of luminescent material (**see Paragraph 20**)

Regarding Claims 19-29

Terao et al teach:

A device for use with a beam transmitter configured to transmit a beam, comprising(see Abstract):

- luminescent layer comprising a luminescent material capable of emitting light while being bombarded by the beam from the beam transmitter (**see Paragraph 129**)
- a detector located near the luminescent layer and the beam transmitter for detecting the light emitted from the luminescent layer (**see Paragraph 81 and Figure 9, Element 8-3**)
- a phase-change layer located adjacent the luminescent layer such that the luminescent layer is positioned between the detector and the phase-change layer, said phase-change layer able to transform from a first phase to a second phase (**see Figure 2, Elements 12, 18 and 19 and Paragraphs 12,14 and 33**).
- wherein light emitted from the luminescent layer and received by the detector materially differs when the phase-change layer transforms from the first phase to the second phase (**see Paragraph 14**)
- wherein the first phase of the phase-change layer enables transmission of materially more light through the phase-change layer from the luminescent layer to the detector than the second phase of the phase-change layer (**see Paragraph 14**)

- wherein the first phase of the phase-change layer represents an unwritten region of the phase-change layer and the second phase of the phase-change layer represents a written region of the phase-change layer (**see Figure 2, Elements 18 and 19**)
- wherein the first phase of the phase-change layer represents a written region of the phase-change layer and the second phase of the phase-change layer represents an unwritten region of the phase-change layer (**see Figure 2, Elements 18 and 19 and Paragraphs 12 and 33**)
- wherein the beam comprises a low power density beam lacking sufficient power to cause the phase-change layer to change from the first phase to the second phase (**see Paragraph 110**)
- wherein the luminescent layer comprises at least one of a YAG-based material, a rare earth element dopant, a YAP-based material, GaN, Zn oxide, Zn sulfide, and Si.sub.3O.sub.4 (**see Paragraph 129**)
- further comprising an anti-reflective coating located proximate the phase-change layer (**see Paragraph 119**)
- further comprising a thermal diffusion layer located proximate the phase-change layer (**see Paragraph 101**)
- further comprising a reflective layer proximate the phase-change layer (**see Paragraph 115**)
- the phase-change layer comprises a plurality of layers of phase-change material (**see Paragraph 20**)

- wherein the luminescent layer comprises a plurality of layers of luminescent material (**see Paragraph 20**)

Regarding Claim 40

Terao et al teach:

A method for storing data on a data storage device comprising a phase change layer and a luminescent layer, the method comprising (**see Abstract and Paragraphs 33,70, and 129**):

- bombarding the luminescent layer with a beam, causing the luminescent layer to emit light (**see Paragraph 129**)
- detecting the light emitted from the luminescent layer using a detector (**see Paragraph 81 and Figure 9, Element 8-3**)
- writing data by transforming the phase change layer from a first phase to a second phase (**see Paragraphs 33 and 70**)
- wherein light emitted from the luminescent layer and detected by the detector materially differs when the phase-change layer transforms from the first phase to the second phase (**see Paragraph 14**)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas D. Alunkal whose telephone number is (571)270-1127. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shanon Foley can be reached on (571)272-0898. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thomas Alunkal
Patent Examiner

SHANON A. FOLEY
SUPERVISORY PATENT EXAMINER